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EXAMINER

NGUYEN, CHAU T

ART UNIT	PAPER NUMBER
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2176

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/01/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/661,320

Applicant(s)

ISHIHARA, HIROSHI

Examiner

Chau Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 October 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-70 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-70 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>9/12/2003</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This action is responsive to action: Amendment filed 10/11/2006.
2. Claims 1-70 are pending in this case. Claims 1, 23, 46, and 58 are independent claims.

Claim Rejections - 35 USC § 101

3. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 46-69 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claims 46-57:

The language of the claims raise a question as to whether the claims are directed merely to an abstract idea that would not result in a practical application producing a concrete, useful, and tangible result to form the basis of statutory subject matter under 35 U.S.C. 101.

Independent Claim 46 recites a method for making graphical drawing instructions valid and invalid. If an instruction is invalid, then that instruction is omitted and not processed. As currently cited, Claim 46 is directed to an abstract idea that does not produce a concrete, useful, and tangible result, in that the method merely *manipulates data*.

Stated differently, the method does nothing with the processed data that produces a concrete, useful and tangible result, such as a printed document.

Dependent Claims 47-57 merely recite further manipulation or specification of data. Thus, none of Claims 47-57 produce a concrete, useful, and tangible result to form the basis of statutory subject matter under 35 U.S.C. 101.

Claims 58-69:

The language of the claims raise a question as to whether the claims are directed merely to an abstract idea that would not result in a practical application producing a concrete, useful, and tangible result to form the basis of statutory subject matter under 35 U.S.C. 101.

Independent Claim 58 recites a computer program for making graphical drawing instructions valid and invalid. If an instruction is invalid, then that instruction is omitted and not processed. As currently cited, Claim 1 is directed to an abstract idea that does not produce a concrete, useful, and tangible result, in that the method merely *manipulates data*.

Stated differently, the program does nothing with the processed data that produces a concrete, useful and tangible result, such as printed document.

Additionally, Claim 58 recites, "*a computer program that makes a computer execute*" various functions. Thus, the recited invention is computer software *per se*. A computer program is merely a set of instructions capable of being executed by a computer. The computer program itself is not a statutory process in that it does not include the computer-readable medium needed to realize the functionality of the computer program. Thus, as currently recited, Claim 58 is directed to an abstract idea that does not produce a concrete, useful and tangible result.

Dependent Claims 59-69 merely recite further manipulation or specification of data. Thus, none of Claims 59-69 produce a concrete, useful, and tangible result to form the basis of statutory subject matter under 35 U.S.C. 101.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. **Claims 1- 70 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kunimasa et al. (Patent No.: 6,456,298 B1; Filed: Aug. 13, 1999) (hereinafter "Kunimasa"), in view of Nagao et al. (Patent No.: 6,100,998; Date of Patent: Aug. 8, 2000) (hereinafter "Nagao").**

In regard to independent claim 1, Kunimasa discloses *an information processing apparatus comprising:*

a drawing omission determination unit that determines whether drawing process corresponding to a graphical drawing instruction, out of a plurality of graphical drawing instructions, can be omitted based on a drawing attribute of a pattern corresponding to the graphical drawing instruction (col. 5, lines 14-34; Kunimasa discloses the drawing logical arithmetic process determination unit analyzes the drawing arithmetic process instruction and determines whether the instruction or a plurality of continuous drawing instructions has the content which may be processed without any logical arithmetic process or not. The Examiner relates this teaching to the current invention that the drawing instructions are analyzed to determine if they should be process further or not; col. 10, lines 42-67 & col. 11, lines 1-30; Fig. 7; Kunimasa further discloses a process in which drawing instructions are analyzed to determine if they are identical or not. An second image pattern along with its drawing instruction is compared to a first image pattern along with its drawing instruction, which is stored in drawing object memory unit. If the drawing information is determined to be identical, the second drawing information is not output and the process for the second drawing information is completed at this point);

an output unit that outputs to an information formation apparatus the other graphical drawing instructions to obtain an image corresponding to the other graphical drawing instructions which are executed (col. 6, lines 20-35; 2 in Fig. 21; Kunimasa

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discloses the interpreter unit which recognizes the drawing information received by the printer to interpret a command by forming command and argument. Based on the instructions of the interpreter unit, the imager unit draws the image.).

Kunimasa does not disclose expressly *a selection unit that makes the graphical drawing instruction invalid if the drawing omission determination unit determines that the drawing process can be omitted, and makes other graphical drawing instructions valid.*

However, Nagao teaches *a selection unit that makes the graphical drawing instruction invalid if the drawing omission determination unit determines that the drawing process can be omitted, and makes other graphical drawing instructions valid* (col. 9, lines 39-41; 313 Fig. 3; col. 10, lines 23-32; Nagao teaches a drawing state storing unit which stores drawing-related information furnished by the instruction from the instruction executing unit. The Examiner uses the broadest interpretation of "drawing-related information" to include state information that relates to whether the instruction is valid or not for executing).

Therefore, at the time of the invention it would have been obvious to a person of ordinary skill in the art to combine Kunimasa with Nagao for the benefit of not executing unnecessary drawing instruction so that high speed and high quality drawing process may be enabled (col.3, lines 32-34).

In regard to dependent claim 2, Kunimasa discloses *the information processing apparatus according to claim 1, wherein the graphical drawing instruction is described in a page description language that includes a basic graphical drawing instruction which specifies a pattern to be drawn, and a drawing attribute instruction which specifies the drawing attribute* (col. 13, lines 49-63; Kunimasa discloses the drawing instruction, including set attribute instructions, are presented in a page description language (PDL).).

In regard to dependent claim 3, Kunimasa discloses *the information processing apparatus according to claim 1, wherein the drawing attribute includes information about a color of a pattern concerning the graphical drawing instruction and a method for performing the drawing process* (col. 13, lines 49-67; col. 14, lines 4-9; col. 14, lines 22-36; Kunimasa discloses how the drawing instruction include attribute information concerning the color pattern of the image.).

In regard to dependent claim 4, Kunimasa discloses *the information processing apparatus according to claim 3, wherein the drawing omission determination unit determines that the drawing process can be omitted when the drawing attribute of a pattern concerning the graphical drawing instruction does not change the contents of a memory at a drawing destination before and after the drawing process regardless of the contents of the memory* (col. 10, lines 42-67 & col. 11, lines 1-30; Fig. 7; Kunimasa discloses a process in which drawing instructions are analyzed to determine if they are

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identical or not. An second image pattern along with it's drawing instruction is compared to a first image pattern along with it's drawing instruction, which is stored in drawing object memory unit. If the drawing information is determined to be identical, the second drawing information is not output and the process for the second drawing information is completed at this point.).

In regard to dependent claim 5, Kunimasa discloses *the information processing apparatus according to claim 4, wherein the drawing omission determination unit determines that the drawing process can be omitted when it is determined from the drawing attribute of a pattern concerning the graphical drawing instruction and a method for performing the drawing process that the contents of a memory at a drawing destination are not changed before and after the drawing process regardless of the contents of the memory* (col. 10, lines 42-67 & col. 11, lines 1-30; Fig. 7; Kunimasa discloses a process in which drawing instructions are analyzed to determine if they are identical or not. An second image pattern along with it's drawing instruction is compared to a first image pattern along with it's drawing instruction, which is stored in drawing object memory unit. If the drawing information is determined to be identical, the second drawing information is not output and the process for the second drawing information is completed at this point.).

In regard to dependent claim 6, Kunimasa discloses *the information processing apparatus according to claim 5, wherein the drawing omission determination unit*

determines that the drawing process can be omitted when the color density is the lowest and also when the method is a logical sum (OR) among the drawing attributes of a pattern concerning the graphical drawing instruction (col. 7, lines 37-45; col. 13, lines 4-6; Kunimasa discloses a user can designate the logical arithmetic process to the bit map data between images, such as logical sum (OR). Kinimasa further discloses the color value (density) of an image can be zero.).

In regard to dependent claim 7, Kunimasa discloses *the information processing apparatus according to claim 1, wherein the drawing omission determination unit determines that the drawing process can be omitted when a memory at a drawing destination is in an initialized state (col. 15, lines 1-38).*

In regard to dependent claim 8, Kunimasa does not disclose expressly *the information processing apparatus according to claim 1, further comprising an output status flag that indicates whether the selection unit has already set a certain graphical drawing instruction valid, wherein the drawing omission determination unit determines whether the drawing process can be omitted based on the state of the output status flag.*

However, Nagao teaches *the information processing apparatus according to claim 1, further comprising an output status flag that indicates whether the selection unit has already set a certain graphical drawing instruction valid, wherein the drawing omission determination unit determines whether the drawing process can be omitted*

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based on the state of the output status flag (col. 9, lines 39-41; 313 Fig. 3; col. 10, lines 23-32; Nagao further teaches a drawing state storing unit which stores drawing-related information furnished by the instructions from the instruction executing unit. Nagao further teaches internal drawing instructions for drawing text, graphic and images, as well as drawing state instructions for setting color, line attributes and other information necessary for drawing. The Examiner using the broadest interpretation of "other information necessary for drawing" to include state information that relates to whether the instruction is valid or not for executing.).

Therefore, at the time of the invention it would have been obvious to a person of ordinary skill in the art to combine Kunimasa with Nagao for the benefit of not executing unnecessary drawing instruction so that high speed and high quality drawing process may be enabled (col.3, lines 32-34).

In regard to dependent claim 9, Kunimasa discloses *the drawing attribute of a pattern concerning the graphical drawing instruction does not change the contents of a memory at a drawing destination before and after the drawing process when the memory is in an initialized state even when the drawing process is carried out* (col. 10, lines 42-67 & col. 11, lines 1-30; Fig. 7; Kunimasa discloses a process in which drawing instructions are analyzed to determine if they are identical or not. A second image pattern along with its drawing instruction is compared to a first image pattern along with its drawing instruction, which is stored in drawing object memory unit. If the

drawing information is determined to be identical, the second drawing information is not output and the process for the second drawing information is completed at this point.).

Kunimasa does not disclose expressly *the information processing apparatus according to claim 8, wherein the drawing omission determination unit determines that the drawing process can be omitted when the output status flag indicates that the graphical drawing instruction is not yet set valid.*

However, Nagao teaches *the information processing apparatus according to claim 8, wherein the drawing omission determination unit determines that the drawing process can be omitted when the output status flag indicates that the graphical drawing instruction is not yet set valid* (col. 9, lines 39-41; 313 Fig. 3; col. 10, lines 23-32; Nagao further teaches a drawing state storing unit which stores drawing-related information furnished by the instructions from the instruction executing unit. Nagao further teaches internal drawing instructions for drawing text, graphic and images, as well as drawing state instructions for setting color, line attributes and other information necessary for drawing. The Examiner using the broadest interpretation of "other information necessary for drawing" to include state information that relates to whether the instruction is valid or not for executing.).

Therefore, at the time of the invention it would have been obvious to a person of ordinary skill in the art to combine Kunimasa with Nagao for the benefit of not

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executing unnecessary drawing instruction so that high speed and high quality drawing process may be enabled (col.3, lines 32-34).

In regard to dependent claim 10, Kunimasa discloses *the information processing apparatus according to claim 8, wherein the drawing omission determination unit determines that the drawing process can be omitted when the output status flag indicates that the graphical drawing instruction is not yet set valid, when the color density is the lowest and also when a method for performing the drawing process is a replacement (SET) among the drawing attributes of a pattern concerning the graphical drawing instruction* (col. 15, lines 56-65; col. 18, lines 3-11; Kunimasa discloses over-writing (*replacement (SET)*) the image when the color value is zero (*color density is the lowest*). Kinimasa further discloses the color value (*density*) of an image can be zero.).

In regard to dependent claim 11, Kunimasa discloses *the information processing apparatus according to claim 8, wherein the drawing omission determination unit determines that the drawing process can be omitted when the output status flag indicates that the graphical drawing instruction is not yet set valid, when the color density is the lowest and also when a method for performing the drawing process is a logical sum (OR) among the drawing attributes of a pattern concerning the graphical drawing instruction* (col. 7, lines 37-45; col. 13, lines 4-6; Kunimasa discloses

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a user can designate the logical arithmetic process to the bit map data between images, such as logical sum (OR). Kinimasa further discloses the color value (*density*) of an image can be zero.).

In regard to dependent claim 12, Kunimasa discloses *the information processing apparatus according to claim 8, wherein the drawing omission determination unit determines that the drawing process can be omitted when the output status flag indicates that the graphical drawing instruction is not yet set valid, when the color density is the lowest and also when a method for performing the drawing process is an exclusive logical sum (XOR) among the drawing attributes of a pattern concerning the graphical drawing instruction* (col. 7, lines 37-45; col. 13, lines 4-6; Kunimasa discloses a user can designate the logical arithmetic process to the bit map data between images, such as exclusive logical sum (XOR). Kinimasa further discloses the color value (*density*) of an image can be zero.).

In regard to dependent claim 13, Kunimasa discloses *the information processing apparatus according to claim 8, wherein the drawing omission determination unit determines that the drawing process can be omitted when the output status flag indicates that the graphical drawing instruction is not yet set valid, when a method of the drawing process is a logical product (AND) among the drawing attributes of a pattern concerning the graphical drawing instruction* (col. 7, lines 37-45; col. 13, lines 4-6; Kunimasa discloses a user can designate the logical arithmetic process to

the bit map data between images, such as logical product (AND). Kinimasa further discloses the color value (*density*) of an image can be zero.).

In regard to dependent claim 14, Kunimasa does not disclose expressly *the information processing apparatus according to claim 8, wherein the output status flag indicates whether the selection unit has already set a certain graphical drawing instruction valid for each graphical drawing instruction concerning an image for one page.*

However, Nagao teaches *the information processing apparatus according to claim 8, wherein the output status flag indicates whether the selection unit has already set a certain graphical drawing instruction valid for each graphical drawing instruction concerning an image for one page* (col. 9, lines 39-41; 313 Fig. 3; col. 10, lines 23-32; Nagao teaches a drawing state storing unit which stores drawing-related information furnished by the instruction from the instruction executing unit. The Examiner using the broadest interpretation of "drawing-related information" to include state information that relates to whether the instruction is valid or not for executing.).

Therefore, at the time of the invention it would have been obvious to a person of ordinary skill in the art to combine Kunimasa with Nagao for the benefit of not executing unnecessary drawing instruction so that high speed and high quality drawing process may be enabled (col.3, lines 32-34).

In regard to dependent claim 15, Kunimasa does not disclose expressly *the information processing apparatus according to claim 8, wherein one page is divided into specific number of determination regions, and the output status flag is provided for each determination region, and the drawing omission determination unit determines whether the drawing can be omitted based on the status of the output status flag for each determination region to which a drawing region concerning the graphical drawing instruction belongs.*

However, Nagao teaches *the information processing apparatus according to claim 8, wherein one page is divided into specific number of determination regions, and the output status flag is provided for each determination region, and the drawing omission determination unit determines whether the drawing can be omitted based on the status of the output status flag for each determination region to which a drawing region concerning the graphical drawing instruction belongs* (col. 1, lines 53-54; col. 5, lines 61-64; col. 9, lines 39-41; 313 Fig. 3; col. 10, lines 23-32; Nagao teaches a drawing state storing unit which stores drawing-related information furnished by the instruction from the instruction executing unit. The Examiner uses the broadest interpretation of "drawing-related information" to include state information that relates to whether the instruction is valid or not for executing.).

Therefore, at the time of the invention it would have been obvious to a person of ordinary skill in the art to combine Kunimasa with Nagao for the benefit of not executing unnecessary drawing instruction so that high speed and high quality drawing process may be enabled (col. 3, lines 32-34).

In regard to dependent claim 16, Kunimasa does not disclose expressly *the information processing apparatus according to claim 15, wherein the determination regions are decided based on bands*.

However, Nagao teaches *the information processing apparatus according to claim 15, wherein the determination regions are decided based on bands* (col. 1, lines 53-54; col. 5, lines 61-64).

Therefore, at the time of the invention it would have been obvious to a person of ordinary skill in the art to combine Kunimasa with Nagao for the benefit of reducing massive memory requirements, thus lowering the cost of memory accordingly (col. 1, lines 44-47).

In regard to dependent claim 17, Kunimasa discloses *the information processing apparatus according to claim 1, wherein when the graphical drawing instruction concerns a pattern of a color, the drawing omission determination unit determines whether the drawing process can be omitted for each color plane of the color* (col. 5, lines 14-34; col. 6, lines 28-40; 2 in Fig. 21; Kunimasa discloses the drawing logical arithmetic process determination unit analyzes the drawing arithmetic

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process instruction and determines whether the instruction or a plurality of continuous drawing instructions has the content which may be processed without any logical arithmetic process or not. The Examiner relates this teaching to the current invention that the drawing instructions are analyzed to determine if they should be process further or not.).

In regard to dependent claim 18, Kunimasa discloses *the information processing apparatus according to claim 1, wherein the drawing omission determination unit determines whether the drawing process can be omitted only when a pattern concerning the graphical drawing instruction is a graphic pattern* (col. 5, lines 14-34; Kunimasa discloses the drawing logical arithmetic process determination unit analyzes the drawing arithmetic process instruction and determines whether the instruction or a plurality of continuous drawing instructions has the content which may be processed without any logical arithmetic process or not. The Examiner relates this teaching to the current invention that the drawing instructions are analyzed to determine if they should be process further or not; col. 6, lines 20-35; 2 in Fig. 21; Kunimasa discloses the interpreter unit which recognizes the drawing information received by the printer to interpret a command by forming command and argument. Based on the instructions of the interpreter unit, the imager unit is called for graphics drawing.).

In regard to dependent claim 19, Kunimasa discloses the drawing logical arithmetic process determination unit analyzes the drawing arithmetic process instruction and determines whether the instruction or a plurality of continuous drawing instructions has the content which may be processed without any logical arithmetic process or not. The Examiner relates this teaching to the current invention that the drawing instructions are analyzed to determine if they should be process further or not (col. 5, lines 14-34);

Kunimasa does not disclose expressly *the information processing apparatus according to claim 1, wherein when a pattern concerning the graphical drawing instruction is an image pattern, the drawing omission determination unit detects continuous pixels of the same color within the image pattern, and determines whether the drawing process can be omitted for each portion of continuous pixels.*

However, Nagao teaches *the information processing apparatus according to claim 1, wherein when a pattern concerning the graphical drawing instruction is an image pattern, the drawing omission determination unit detects continuous pixels of the same color within the image pattern, and determines whether the drawing process can be omitted for each portion of continuous pixels.* (col. 15, lines 35-54; Nagao teaches pixel values varies from text/graphic data to image data. Text/graphic data have the same pixel value.).

Therefore, at the time of the invention it would have been obvious to a person of ordinary skill in the art to combine Kunimasa with Nagao for the benefit of not

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executing unnecessary drawing instruction so that high speed and high quality drawing process may be enabled (col.3, lines 32-34).

In regard to dependent claim 20, Kunimasa does not disclose expressly *the information processing apparatus according to claim 1, wherein when a pattern concerning the graphical drawing instruction is an image pattern, the drawing omission determination unit determines whether the drawing process can be omitted of the image pattern in a word length unit.*

However, Nagao teaches *the information processing apparatus according to claim 1, wherein when a pattern concerning the graphical drawing instruction is an image pattern, the drawing omission determination unit determines whether the drawing process can be omitted of the image pattern in a word length unit* (col. 14, lines 24-32).

Therefore, at the time of the invention it would have been obvious to a person of ordinary skill in the art to combine Kunimasa with Nagao for the benefit of not executing unnecessary drawing instruction so that high speed and high quality drawing process may be enabled (col.3, lines 32-34).

In regard to dependent claim 21, Kunimasa discloses *the information processing apparatus according to claim 1, wherein the output unit outputs the other graphical drawing instructions to the image formation apparatus one-by-one* (col. 11, line 59-64).

In regard to dependent claim 22, Kunimasa discloses *the information processing apparatus according to claim 1, further comprising a drawing data memory that stores the other graphical drawing instructions, wherein the output unit outputs the other graphical drawing instructions stored in the drawing data memory to the image formation apparatus altogether* (col. 4, line 30-40; col. 11, line 18-30; 2 & 3 in Fig. 1; Kunimasa discloses how drawing instructions are stored in the drawing object memory unit.).

In regard to independent claim 23, Kunimasa discloses *an image formation apparatus comprising:*

a page memory (col. 5, line 54; 24 in Fig 2.; Kunimasa discloses *an image forming system which include a page memory*);

a drawing omission determination unit that determines whether drawing process corresponding to a graphical drawing instruction, out of a plurality of graphical drawing instructions, can be omitted based on a drawing attribute of a pattern corresponding to the graphical drawing instruction (col. 5, lines 14-34; Kunimasa discloses the drawing logical arithmetic process determination unit analyzes the drawing arithmetic process instruction and determines whether the instruction or a plurality of continuous drawing instructions has the content which may be processed without any logical arithmetic process or not. The Examiner relates this teaching to the current invention that the drawing instructions are analyzed to determine if they should be process further or not;

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col. 10, lines 42-67 & col. 11, lines 1-30; Fig. 7; Kunimasa further discloses a process in which drawing instructions are analyzed to determine if they are identical or not. An second image pattern along with it's drawing instruction is compared to a first image pattern along with it's drawing instruction, which is stored in drawing object memory unit. If the drawing information is determined to be identical, the second drawing information is not output and the process for the second drawing information is completed at this point.).

a drawing unit that performs the drawing process to draws an image onto the page memory based on the other graphical drawing instructions (col. 6, lines 20-45; Kunimasa discloses an image unit that draws an image depending on the instructions of the interpreter unit. The images are then stored in a page memory.).

Kunimasa does not disclose expressly a selection unit that makes the graphical drawing instruction invalid if the drawing omission determination unit determines that the drawing process can be omitted, and makes other graphical drawing instructions valid;

an image formation unit that forms an image onto a recording medium paper based on the image on the page memory.

However, Nagao teaches *a selection unit that makes the graphical drawing instruction invalid if the drawing omission determination unit determines that the drawing process can be omitted, and makes other graphical drawing instructions valid*

(col. 9, lines 39-41; 313 Fig. 3; col. 10, lines 23-32; Nagao teaches a drawing state storing unit which stores drawing-related information furnished by the instruction from the instruction executing unit. The Examiner using the broadest interpretation of "drawing-related information" to include state information that relates to whether the instruction is valid or not for executing.).

an image formation unit that forms an image onto a recording medium paper based on the image on the page memory (col. 8, lines 9-16; Nagao teaches the output unit receives print data and prints the received data onto recording paper.).

Therefore, at the time of the invention it would have been obvious to a person of ordinary skill in the art to combine Kunimasa with Nagao for the benefit of not executing unnecessary drawing instruction so that high speed and high quality drawing process may be enabled (col.3, lines 32-34).

In regard to dependent claim 24, Kunimasa discloses *the image formation apparatus according to claim 23, wherein the graphical drawing instruction is described in a page description language that includes a basic graphical drawing instruction which specifies a pattern to be drawn, and a drawing attribute instruction which specifies the drawing attribute (col. 13, lines 49-60; Fig. 10; Kunimasa discloses the drawing instruction are sent by the drawing instruction group called PDL (page description language)).*

In regard to dependent claim 25, Kunimasa discloses *the image formation apparatus according to claim 23, wherein the drawing attribute includes information about a color of a pattern concerning the graphical drawing instruction and a method for performing the drawing process (col. 13, lines 49-67 & col. 14, lines 1-52).*

In regard to dependent claim 26, Kunimasa discloses *the image formation apparatus according to claim 25, wherein the drawing omission determination unit determines that the drawing process can be omitted when the drawing attribute of a pattern concerning the graphical drawing instruction does not change the contents of a memory at a drawing destination before and after the drawing process regardless of the contents of the memory (col. 10, lines 42-67 & col. 11, lines 1-30; Fig. 7; Kunimasa discloses a process in which drawing instructions are analyzed to determine if they are identical or not. An second image pattern along with it's drawing instruction is compared to a first image pattern along with it's drawing instruction, which is stored in drawing object memory unit. If the drawing information is determined to be identical, the second drawing information is not output and the process for the second drawing information is completed at this point.).*

In regard to dependent claim 27, Kunimasa discloses *the image formation apparatus according to claim 26, wherein the drawing omission determination unit determines that the drawing process can be omitted when it is determined from the drawing attribute of a pattern concerning the graphical drawing instruction and a*

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method for performing the drawing process that the contents of a memory at a drawing destination are not changed before and after the drawing process regardless of the contents of the memory (col. 10, lines 42-67 & col. 11, lines 1-30; Fig. 7; Kunimasa discloses a process in which drawing instructions are analyzed to determine if they are identical or not. An second image pattern along with it's drawing instruction is compared to a first image pattern along with it's drawing instruction, which is stored in drawing object memory unit. If the drawing information is determined to be identical, the second drawing information is not output and the process for the second drawing information is completed at this point.).

In regard to dependent claim 28, Kunimasa discloses *the image formation apparatus according to claim 27, wherein the drawing omission determination unit determines that the drawing process can be omitted when the color density is the lowest and also when the method is a logical sum (OR) among the drawing attributes of a pattern concerning the graphical drawing instruction (col. 7, lines 37-45; col. 13, lines 4-6; Kunimasa discloses a user can designate the logical arithmetic process to the bit map data between images, such as logical sum (OR). Kinimasa further discloses the color value (density) of an image can be zero.).*

In regard to dependent claim 29, Kunimasa discloses *the image formation apparatus according to claim 23, wherein the drawing omission determination unit*

determines that the drawing process can be omitted when a memory at a drawing destination is in an initialized state (col. 15, lines 1-38).

In regard to dependent claim 30, Kunimasa does not disclose expressly *the image formation apparatus according to claim 23, further comprising an output status flag for each graphical drawing instruction, wherein the selection unit sets an output status flag corresponding a certain graphical drawing instruction to set that graphical drawing instruction valid, wherein the drawing omission determination unit determines whether the drawing process can be omitted based on the state of the output status flag.*

However, Nagao teaches *the image formation apparatus according to claim 23, further comprising an output status flag for each graphical drawing instruction, wherein the selection unit sets an output status flag corresponding a certain graphical drawing instruction to set that graphical drawing instruction valid, wherein the drawing omission determination unit determines whether the drawing process can be omitted based on the state of the output status flag* (col. 9, lines 39-41; 313 Fig. 3; col. 10, lines 23-32; Nagao further teaches a drawing state storing unit which stores drawing-related information furnished by the instructions from the instruction executing unit. Nagao further teaches internal drawing instructions for drawing text, graphic and images, as well as drawing state instructions for setting color, line attributes and other information necessary for drawing. The Examiner using the broadest interpretation of " other

information necessary for drawing" to include state information that relates to whether the instruction is valid or not for executing.).

Therefore, at the time of the invention it would have been obvious to a person of ordinary skill in the art to combine Kunimasa with Nagao for the benefit of not executing unnecessary drawing instruction so that high speed and high quality drawing process may be enabled (col.3, lines 32-34).

In regard to dependent claim 31, Kunimasa discloses *the image formation apparatus according to claim 30, wherein the drawing attribute of a pattern concerning the graphical drawing instruction does not change the contents of a memory at a drawing destination before and after the drawing process when the memory is in an initialized state even when the drawing process is carried out* (col. 10, lines 42-67 & col. 11, lines 1-30; Fig. 7; Kunimasa discloses a process in which drawing instructions are analyzed to determine if they are identical or not. An second image pattern along with it's drawing instruction is compared to a first image pattern along with it's drawing instruction, which is stored in drawing object memory unit. If the drawing information is determined to be identical, the second drawing information is not output and the process for the second drawing information is completed at this point.).

Kunimasa does not disclose expressly *the image formation apparatus according to claim 30, wherein the drawing omission determination unit determines that the drawing process can be omitted when the output status flag is not set.*

However, Nagao teaches *the image formation apparatus according to claim 30, wherein the drawing omission determination unit determines that the drawing process can be omitted when the output status flag is not set* (col. 9, lines 39-41; 313 Fig. 3; col. 10, lines 23-32; Nagao further teaches a drawing state storing unit which stores drawing-related information furnished by the instructions from the instruction executing unit. Nagao further teaches internal drawing instructions for drawing text, graphic and images, as well as drawing state instructions for setting color, line attributes and other information necessary for drawing. The Examiner using the broadest interpretation of "other information necessary for drawing" to include state information that relates to whether the instruction is valid or not for executing.).

Therefore, at the time of the invention it would have been obvious to a person of ordinary skill in the art to combine Kunimasa with Nagao for the benefit of not executing unnecessary drawing instruction so that high speed and high quality drawing process may be enabled (col.3, lines 32-34).

In regard to dependent claim 32, Kunimasa discloses *the image formation apparatus according to claim 30, wherein the drawing omission determination unit determines that the drawing process can be omitted when the output status flag is not set, when the color density is the lowest, and when a method for performing the drawing process is a replacement (SET) among the drawing attributes of a pattern concerning the graphical drawing instruction* (col. 15, lines 56-65; col. 18, lines 3-11;

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Kunimasa discloses over-writing (*replacement (SET)*) the image when the color value is zero (*color density is the lowest*). Kinimasa further discloses the color value (*density*) of an image can be zero.).

In regard to dependent claim 33, Kunimasa discloses *the image formation apparatus according to claim 30, when the color density is the lowest and also when a method for performing the drawing process is a logical sum (OR) among the drawing attributes of a pattern concerning the graphical drawing instruction (col. 7, lines 37-45; col. 13, lines 4-6; Kunimasa discloses a user can designate the logical arithmetic process to the bit map data between images, such as logical sum (OR). Kinimasa further discloses the color value (density) of an image can be zero.)*.

Kunimasa does not disclose expressly *the image formation apparatus according to claim 30, wherein the drawing omission determination unit determines that the drawing process can be omitted when the output status flag is not set;*

However, Nagao teaches *the image formation apparatus according to claim 30, wherein the drawing omission determination unit determines that the drawing process can be omitted when the output status flag is not set (col. 9, lines 39-41; 313 Fig. 3; col. 10, lines 23-32; Nagao further teaches a drawing state storing unit which stores drawing-related information furnished by the instructions from the instruction executing unit. Nagao further teaches internal drawing instructions for drawing text, graphic and*

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images, as well as drawing state instructions for setting color, line attributes and other information necessary for drawing. The Examiner using the broadest interpretation of "other information necessary for drawing" to include state information that relates to whether the instruction is valid or not for executing.).

Therefore, at the time of the invention it would have been obvious to a person of ordinary skill in the art to combine Kunimasa with Nagao for the benefit of not executing unnecessary drawing instruction so that high speed and high quality drawing process may be enabled (col.3, lines 32-34).

In regard to dependent claim 34, Kunimasa discloses *the image formation apparatus according to claim 30, wherein the color density is the lowest, and when a method for performing the drawing process is an exclusive logical sum (XOR) among the drawing attributes of a pattern concerning the graphical drawing instruction* (col. 7, lines 37-45; col. 13, lines 4-6; Kunimasa discloses a user can designate the logical arithmetic process to the bit map data between images, such as exclusive logical sum (XOR). Kinimasa further discloses the color value (*density*) of an image can be zero.).

Kunimasa does not disclose expressly the *image formation apparatus according to claim 30, wherein the drawing omission determination unit determines that the drawing process can be omitted when the output status flag is not set.*

However, Nagao teaches *image formation apparatus according to claim 30, wherein the drawing omission determination unit determines that the drawing process can be omitted when the output status flag is not set* (col. 9, lines 39-41; 313 Fig. 3; col. 10, lines 23-32; Nagao further teaches a drawing state storing unit which stores drawing-related information furnished by the instructions from the instruction executing unit. Nagao further teaches internal drawing instructions for drawing text, graphic and images, as well as drawing state instructions for setting color, line attributes and other information necessary for drawing. The Examiner using the broadest interpretation of "other information necessary for drawing" to include state information that relates to whether the instruction is valid or not for executing.).

Therefore, at the time of the invention it would have been obvious to a person of ordinary skill in the art to combine Kunimasa with Nagao for the benefit of not executing unnecessary drawing instruction so that high speed and high quality drawing process may be enabled (col.3, lines 32-34).

In regard to dependent claim 35, Kunimasa discloses *the image formation apparatus according to claim 30, wherein the modification method is a logical product (AND) among the drawing attributes of a pattern concerning the graphical drawing instruction* (col. 7, lines 37-45; col. 13, lines 4-6; Kunimasa discloses a user can designate the logical arithmetic process to the bit map data between images, such as

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logical product (AND). Kinimasa further discloses the color value (*density*) of an image can be zero.).

Kunimasa does not disclose expressly teaches the *apparatus according to claim 30, wherein the drawing omission determination unit determines that the drawing process can be omitted when the output status flag is not set.*

However, Nagao teaches the *apparatus according to claim 30, wherein the drawing omission determination unit determines that the drawing process can be omitted when the output status flag is not set* (col. 9, lines 39-41; 313 Fig. 3; col. 10, lines 23-32; Nagao further teaches a drawing state storing unit which stores drawing-related information furnished by the instructions from the instruction executing unit. Nagao further teaches internal drawing instructions for drawing text, graphic and images, as well as drawing state instructions for setting color, line attributes and other information necessary for drawing. The Examiner using the broadest interpretation of "other information necessary for drawing" to include state information that relates to whether the instruction is valid or not for executing.).

Therefore, at the time of the invention it would have been obvious to a person of ordinary skill in the art to combine Kunimasa with Nagao for the benefit of not executing unnecessary drawing instruction so that high speed and high quality drawing process may be enabled (col.3, lines 32-34).

In regard to dependent claim 36, Kunimasa does not disclose expressly *the image formation apparatus according to claim 30, wherein the output status flag indicates whether a certain graphical drawing instruction has been made valid for each graphical drawing instruction concerning an image for one page.*

However, Nagao teaches *the image formation apparatus according to claim 30, wherein the output status flag indicates whether a certain graphical drawing instruction has been made valid for each graphical drawing instruction concerning an image for one page* (col. 9, lines 39-41; 313 Fig. 3; col. 10, lines 23-32; Nagao teaches a drawing state storing unit which stores drawing-related information furnished by the instruction from the instruction executing unit. The Examiner using the broadest interpretation of "drawing-related information" to include state information that relates to whether the instruction is valid or not for executing.);

Therefore, at the time of the invention it would have been obvious to a person of ordinary skill in the art to combine Kunimasa with Nagao for the benefit of not executing unnecessary drawing instruction so that high speed and high quality drawing process may be enabled (col.3, lines 32-34).

In regard to dependent claim 37, Kunimasa does not disclose expressly *the image formation apparatus according to claim 30, further comprising a dividing unit that divides one page into a specific number of determination regions, and the output status flag is provided for each determination region, and the drawing omission determination*

unit determines whether the drawing can be omitted based on the status of the output status flag for each determination region to which a drawing region concerning the graphical drawing instruction belongs.

However, Nagao teaches *the image formation apparatus according to claim 30, further comprising a dividing unit that divides one page into a specific number of determination regions, and the output status flag is provided for each determination region, and the drawing omission determination unit determines whether the drawing can be omitted based on the status of the output status flag for each determination region to which a drawing region concerning the graphical drawing instruction belongs* (col. 1, lines 53-54; col. 5, lines 61-64; col. 9, lines 39-41; 313 Fig. 3; col. 10, lines 23-32; Nagao teaches a drawing state storing unit which stores drawing-related information furnished by the instruction from the instruction executing unit. The Examiner uses the broadest interpretation of "drawing-related information" to include state information that relates to whether the instruction is valid or not for executing.).

Therefore, at the time of the invention it would have been obvious to a person of ordinary skill in the art to combine Kunimasa with Nagao for the benefit of not executing unnecessary drawing instruction so that high speed and high quality drawing process may be enabled (col. 3, lines 32-34).

In regard to dependent claim 38, Kunimasa does not disclose expressly *the image formation apparatus according to claim 37, wherein the dividing unit divides the one page into the determination regions based on bands.*

However, Nagao teaches *the image formation apparatus according to claim 37, wherein the dividing unit divides the one page into the determination regions based on bands* (col. 1, lines 53-54; col. 5, lines 61-64).

Therefore, at the time of the invention it would have been obvious to a person of ordinary skill in the art to combine Kunimasa with Nagao for the benefit of reducing massive memory requirements, thus lowering the cost of memory accordingly (col. 1, lines 44-47).

In regard to dependent claim 39, Kunimasa discloses *the image formation apparatus according to claim 23, wherein the graphical drawing instruction concerns a pattern of a color, and the drawing omission determination unit determines whether the drawing process can be omitted for each color plane of the color* (col. 5, lines 14-34; col. 6, lines 28-40; 2 in Fig. 21; Kunimasa discloses the drawing logical arithmetic process determination unit analyzes the drawing arithmetic process instruction and determines whether the instruction or a plurality of continuous drawing instructions has the content which may be processed without any logical arithmetic process or not. The Examiner relates this teaching to the current invention that the drawing instructions are analyzed to determine if they should be process further or not.).

In regard to dependent claim 40, Kunimasa discloses *the image formation apparatus according to claim 23, wherein the drawing omission determination unit determines whether the drawing process can be omitted when the graphical drawing instruction corresponds to a graphic pattern* (col. 5, lines 14-34; Kunimasa discloses the drawing logical arithmetic process determination unit analyzes the drawing arithmetic process instruction and determines whether the instruction or a plurality of continuous drawing instructions has the content which may be processed without any logical arithmetic process or not. The Examiner relates this teaching to the current invention that the drawing instructions are analyzed to determine if they should be process further or not; col. 6, lines 20-35; 2 in Fig. 21; Kunimasa discloses the interpreter unit which recognizes the drawing information received by the printer to interpret a command by forming command and argument. Based on the instructions of the interpreter unit, the imager unit is called for graphics drawing.).

In regard to dependent claim 41, Kunimasa discloses the drawing logical arithmetic process determination unit analyzes the drawing arithmetic process instruction and determines whether the instruction or a plurality of continuous drawing instructions has the content which may be processed without any logical arithmetic process or not. The Examiner relates this teaching to the current invention that the drawing instructions are analyzed to determine if they should be process further or not (col. 5, lines 14-34);

Kunimasa does not disclose expressly *the image formation apparatus according to claim 23, wherein when a pattern concerning the graphical drawing instruction is an image pattern, the drawing omission determination unit detects continuous pixels of the same color within the image pattern, and determines whether the drawing process can be omitted for each portion of continuous pixels.*

However, Nagao teaches *the image formation apparatus according to claim 23, wherein when a pattern concerning the graphical drawing instruction is an image pattern, the drawing omission determination unit detects continuous pixels of the same color within the image pattern, and determines whether the drawing process can be omitted for each portion of continuous pixels* (col. 15, lines 35-54; Nagao teaches pixel values varies from text/graphic data to image data. Text/graphic data have the same pixel value.).

Therefore, at the time of the invention it would have been obvious to a person of ordinary skill in the art to combine Kunimasa with Nagao for the benefit of not executing unnecessary drawing instruction so that high speed and high quality drawing process may be enabled (col.3, lines 32-34).

In regard to dependent claim 42, Kunimasa does not disclose expressly *the image formation apparatus according to claim 23, wherein when a pattern concerning the graphical drawing instruction is an image pattern, the drawing omission determination unit determines whether the drawing process can be omitted of the image pattern in a word length unit.*

However, Nagao teaches *the image formation apparatus according to claim 23, wherein when a pattern concerning the graphical drawing instruction is an image pattern, the drawing omission determination unit determines whether the drawing process can be omitted of the image pattern in a word length unit* (col. 14, lines 24-32).

Therefore, at the time of the invention it would have been obvious to a person of ordinary skill in the art to combine Kunimasa with Nagao for the benefit of not executing unnecessary drawing instruction so that high speed and high quality drawing process may be enabled (col.3, lines 32-34).

In regard to dependent claim 43, Kunimasa discloses *the image formation apparatus according to claim 23, wherein the output unit outputs the other graphical drawing instructions to the image formation apparatus one-by-one* (col. 11, line 59-64).

In regard to dependent claim 44, Kunimasa discloses *the image formation apparatus according to claim 23, further comprising a drawing data memory that stores the other graphical drawing instructions, wherein the output unit outputs the other graphical drawing instructions stored in the drawing data memory to the image formation apparatus altogether* (col. 4, line 30-40; col. 11, line 18-30; 2 & 3 in Fig. 1; Kunimasa discloses drawing instructions are store in the drawing object memory unit.).

In regard to dependent claim 45, Kunimasa discloses *the image formation apparatus according to claim 24, further comprising:*

a receiving unit that receives the drawing instructions from an external source
(col.5, line 52; 18 in Fig 2.);

and an interpreter that converts the drawing instructions into the graphical drawing instructions of a format which is suitable for the drawing process (col. 6, lines 20-35; 2 in Fig. 21; Kunimasa discloses the interpreter unit which recognizes the drawing information received by the printer to interpret a command by forming command and argument. Based on the instructions of the interpreter unit, the imager unit draws the image).

In regard to independent claim 46, Kunimasa discloses *a drawing processing method comprising:*

determining whether drawing process corresponding to a graphical drawing instruction, from a plurality of graphical drawing instructions can be omitted by an image formation apparatus based on a drawing attribute of a pattern corresponding to the graphical drawing instruction (col. 5, lines 14-34; Kunimasa discloses the drawing logical arithmetic process determination unit analyzes the drawing arithmetic process instruction and determines whether the instruction or a plurality of continuous drawing instructions has the content which may be processed without any logical arithmetic process or not. The Examiner relates this teaching to the current invention that the drawing instructions are analyzed to determine if they should be process further or not;

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col. 10, lines 42-67 & col. 11, lines 1-30; Fig. 7; Kunimasa further discloses a process in which drawing instructions are analyzed to determine if they are identical or not. An second image pattern along with it's drawing instruction is compared to a first image pattern along with it's drawing instruction, which is stored in drawing object memory unit. If the drawing information is determined to be identical, the second drawing information is not output and the process for the second drawing information is completed at this point.).

Kunimasa does not disclose expressly *making the graphical drawing instruction invalid if it is determined that the drawing process can be omitted by the image formation apparatus, and making other graphical drawing instructions valid.*

However, Nagao teaches *making the graphical drawing instruction invalid if it is determined at the determining that the drawing process can be omitted, and making other graphical drawing instructions valid* (col. 9, lines 39-41; 313 Fig. 3; col. 10, lines 23-32; Nagao teaches a drawing state storing unit which stores drawing-related information furnished by the instruction from the instruction executing unit. The Examiner using the broadest interpretation of "drawing-related information" to include state information that relates to whether the instruction is valid or not for executing.).

Therefore, at the time of the invention it would have been obvious to a person of ordinary skill in the art to combine Kunimasa with Nagao for the benefit of not executing unnecessary drawing instruction so that high speed and high quality drawing process may be enabled (col.3, lines 32-34).

In regard to dependent claim 47, Kunimasa discloses *the drawing processing method according to claim 46, wherein the determining includes determining that the drawing process can be omitted when the drawing attribute of a pattern concerning the graphical drawing instruction does not change the contents of a memory at a drawing destination before and after the drawing process regardless of the contents of the memory* (col. 10, lines 42-67 & col. 11, lines 1-30; Fig. 7; Kunimasa discloses a process in which drawing instructions are analyzed to determine if they are identical or not. An second image pattern along with it's drawing instruction is compared to a first image pattern along with it's drawing instruction, which is stored in drawing object memory unit. If the drawing information is determined to be identical, the second drawing information is not output and the process for the second drawing information is completed at this point.).

In regard to dependent claim 48, Kunimasa discloses *the drawing processing method according to claim 47, wherein the determining includes determining that the drawing process can be omitted when it is determined from the drawing attribute of a pattern concerning the graphical drawing instruction and a method for performing the drawing process that the contents of a memory at a drawing destination are not changed before and after the drawing process regardless of the contents of the memory* (col. 10, lines 42-67 & col. 11, lines 1-30; Fig. 7; Kunimasa discloses a process in which drawing instructions are analyzed to determine if they are identical or not. An second image pattern along with it's drawing instruction is compared to a first

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image pattern along with it's drawing instruction, which is stored in drawing object memory unit. If the drawing information is determined to be identical, the second drawing information is not output and the process for the second drawing information is completed at this point.).

In regard to dependent claim 49, Kunimasa discloses *the drawing processing method according to claim 46, wherein the determining includes determining that the drawing process can be omitted when a memory at a drawing destination is in an initialized state* (col. 15, lines 1-38).

In regard to dependent claim 50, Kunimasa does not disclose expressly *the drawing processing method according to claim 46, wherein the determining includes determining whether the drawing process can be omitted based on a state of an output status flag that is set when a certain graphical drawing instruction is made valid*.

However, Nagao teaches *the drawing processing method according to claim 46, wherein the determining includes determining whether the drawing process can be omitted based on a state of an output status flag that is set when a certain graphical drawing instruction is made valid* (col. 9, lines 39-41; 313 Fig. 3; col. 10, lines 23-32; Nagao further teaches a drawing state storing unit which stores drawing-related information furnished by the instructions from the instruction executing unit. Nagao further teaches internal drawing instructions for drawing text, graphic and images, as well as drawing state instructions for setting color, line attributes and other information

necessary for drawing. The Examiner using the broadest interpretation of "other information necessary for drawing" to include state information that relates to whether the instruction is valid or not for executing).

Therefore, at the time of the invention it would have been obvious to a person of ordinary skill in the art to combine Kunimasa with Nagao for the benefit of not executing unnecessary drawing instruction so that high speed and high quality drawing process may be enabled (col.3, lines 32-34).

In regard to dependent claim 51, Kunimasa discloses *the drawing processing method according to claim 51, wherein the drawing attribute of a pattern concerning the graphical drawing instruction does not change the contents of a memory at a drawing destination before and after the drawing process when the memory is in an initialized state even when the drawing process is carried out* (col. 10, lines 42-67 & col. 11, lines 1-30; Fig. 7; Kunimasa discloses a process in which drawing instructions are analyzed to determine if they are identical or not. An second image pattern along with it's drawing instruction is compared to a first image pattern along with it's drawing instruction, which is stored in drawing object memory unit. If the drawing information is determined to be identical, the second drawing information is not output and the process for the second drawing information is completed at this point.).

Kunimasa does not disclose expressly *the drawing processing method according to claim 51, wherein the determining includes determining that the drawing process can be omitted when the output status flag is not set.*

However, Nagao teaches *the image formation apparatus according to claim 30, wherein the drawing omission determination unit determines that the drawing process can be omitted when the output status flag is not set* (col. 9, lines 39-41; 313 Fig. 3; col. 10, lines 23-32; Nagao further teaches a drawing state storing unit which stores drawing-related information furnished by the instructions from the instruction executing unit. Nagao further teaches internal drawing instructions for drawing text, graphic and images, as well as drawing state instructions for setting color, line attributes and other information necessary for drawing. The Examiner using the broadest interpretation of "other information necessary for drawing" to include state information that relates to whether the instruction is valid or not for executing.).

Therefore, at the time of the invention it would have been obvious to a person of ordinary skill in the art to combine Kunimasa with Nagao for the benefit of not executing unnecessary drawing instruction so that high speed and high quality drawing process may be enabled (col.3, lines 32-34).

In regard to dependent claim 52, Kunimasa does not disclose expressly *the drawing processing method according to claim 51, wherein the output status flag indicates whether a certain graphical drawing instruction has been made valid for each graphical drawing instruction concerning an image for one page.*

However, Nagao teaches *the drawing processing method according to claim 51, wherein the output status flag indicates whether a certain graphical drawing instruction*

has been made valid for each graphical drawing instruction concerning an image for one page (col. 9, lines 39-41; 313 Fig. 3; col. 10, lines 23-32; Nagao further teaches a drawing state storing unit which stores drawing-related information furnished by the instructions from the instruction executing unit. Nagao further teaches internal drawing instructions for drawing text, graphic and images, as well as drawing state instructions for setting color, line attributes and other information necessary for drawing. The Examiner using the broadest interpretation of "other information necessary for drawing" to include state information that relates to whether the instruction is valid or not for executing.).

Therefore, at the time of the invention it would have been obvious to a person of ordinary skill in the art to combine Kunimasa with Nagao for the benefit of not executing unnecessary drawing instruction so that high speed and high quality drawing process may be enabled (col.3, lines 32-34).

In regard to dependent claim 53, Kunimasa does not disclose expressly *the drawing processing method according to claim 51, further comprising dividing one page into a desired number of determination regions, wherein the output status flag is provided in each determination region, and the determining includes determining whether the drawing can be omitted based on the status of the output status flag for each determination region to which a drawing region concerning the graphical drawing instruction belongs.*

However, Nagao teaches *drawing processing method according to claim 51, further comprising dividing one page into a desired number of determination regions, wherein the output status flag is provided in each determination region, and the determining includes determining whether the drawing can be omitted based on the status of the output status flag for each determination region to which a drawing region concerning the graphical drawing instruction belongs* (col. 1, lines 53-54; col. 5, lines 61-64; col. 9, lines 39-41; 313 Fig. 3; col. 10, lines 23-32; Nagao teaches a drawing state storing unit which stores drawing-related information furnished by the instruction from the instruction executing unit. The Examiner uses the broadest interpretation of "drawing-related information" to include state information that relates to whether the instruction is valid or not for executing.).

Therefore, at the time of the invention it would have been obvious to a person of ordinary skill in the art to combine Kunimasa with Nagao for the benefit of not executing unnecessary drawing instruction so that high speed and high quality drawing process may be enabled (col. 3, lines 32-34).

In regard to dependent claim 54, Kunimasa does not disclose expressly *the drawing processing method according to claim 53, wherein the dividing includes dividing the one page into the determination regions based on bands.*

However, Nagao teaches *the information processing apparatus according to claim 15, wherein the determination regions are decided based on bands* (col. 1, lines 53-54; col. 5, lines 61-64).

Therefore, at the time of the invention it would have been obvious to a person of ordinary skill in the art to combine Kunimasa with Nagao for the benefit of reducing massive memory requirements, thus lowering the cost of memory accordingly (col. 1, lines 44-47).

In regard to dependent claim 55, Kunimasa discloses *the drawing processing method according to claim 46, wherein the graphical drawing instruction concerns a pattern of a color, and the determining includes determining whether the drawing process can be omitted for each color plane of the color* (col. 5, lines 14-34; col. 6, lines 28-40; 2 in Fig. 21; Kunimasa discloses the drawing logical arithmetic process determination unit analyzes the drawing arithmetic process instruction and determines whether the instruction or a plurality of continuous drawing instructions has the content which may be processed without any logical arithmetic process or not. The Examiner relates this teaching to the current invention that the drawing instructions are analyzed to determine if they should be process further or not.).

In regard to dependent claim 56, Kunimasa does not disclose expressly *the drawing processing method according to claim 46, wherein the graphical drawing instruction corresponds to an image pattern, and the determining includes detecting*

continuous pixels of the same color within the image pattern, and determining whether the drawing process can be omitted for each portion of continuous pixels.

However, Nagao teaches *the drawing processing method according to claim 46, wherein the graphical drawing instruction corresponds to an image pattern, and the determining includes detecting continuous pixels of the same color within the image pattern, and determining whether the drawing process can be omitted for each portion of continuous pixels* (col. 15, lines 35-54; Nagao teaches pixel values varies from text/graphic data to image data. Text/graphic data have the same pixel value); *and*

Therefore, at the time of the invention it would have been obvious to a person of ordinary skill in the art to combine Kunimasa with Nagao for the benefit of not executing unnecessary drawing instruction so that high speed and high quality drawing process may be enabled (col.3, lines 32-34).

In regard to dependent claim 57, Kunimasa does not disclose expressly *the drawing processing method according to claim 46, wherein the graphical drawing instruction corresponds to an image pattern, and the determining includes determining whether the drawing process can be omitted from the image pattern in a word length unit.*

However, Nagao teaches *the drawing processing method according to claim 46, wherein the graphical drawing instruction corresponds to an image pattern, and the determining includes determining whether the drawing process can be omitted from the image pattern in a word length unit* (col. 14, lines 24-32).

Therefore, at the time of the invention it would have been obvious to a person of ordinary skill in the art to combine Kunimasa with Nagao for the benefit of not executing unnecessary drawing instruction so that high speed and high quality drawing process may be enabled (col.3, lines 32-34).

In regard to independent claim 58, Kunimasa discloses *a program storage medium tangibly embodying a computer program that makes a computer execute: determining whether drawing process corresponding to a graphical drawing instruction, from a plurality of graphical drawing instructions can be omitted by an image formation apparatus, based on a drawing attribute of a pattern corresponding to the graphical drawing instruction* (col. 5, lines 14-34; Kunimasa discloses the drawing logical arithmetic process determination unit analyzes the drawing arithmetic process instruction and determines whether the instruction or a plurality of continuous drawing instructions has the content which may be processed without any logical arithmetic process or not. The Examiner relates this teaching to the current invention that the drawing instructions are analyzed to determine if they should be process further or not; col. 10, lines 42-67 & col. 11, lines 1-30; Fig. 7; Kunimasa further discloses a process in which drawing instructions are analyzed to determine if they are identical or not. An second image pattern along with it's drawing instruction is compared to a first image pattern along with it's drawing instruction, which is stored in drawing object memory unit. If the drawing information is determined to be identical, the second drawing

information is not output and the process for the second drawing information is completed at this point.).

Kunimasa does not disclose expressly *making the graphical drawing instruction invalid if it is determined that the drawing process can be omitted by the image formation apparatus, and making other graphical drawing instructions valid.*

However, Nagao teaches *making the graphical drawing instruction invalid if it is determined at the determining that the drawing process can be omitted, and making other graphical drawing instructions valid.* (col. 9, lines 39-41; 313 Fig. 3; col. 10, lines 23-32; Nagao teaches a drawing state storing unit which stores drawing-related information furnished by the instruction from the instruction executing unit. The Examiner using the broadest interpretation of "drawing-related information" to include state information that relates to whether the instruction is valid or not for executing).

Therefore, at the time of the invention it would have been obvious to a person of ordinary skill in the art to combine Kunimasa with Nagao for the benefit of not executing unnecessary drawing instruction so that high speed and high quality drawing process may be enabled (col.3, lines 32-34).

In regard to dependent claim 59, Kunimasa discloses *the program storage medium according to claim 58, wherein the determining includes determining that the drawing process can be omitted when the drawing attribute of a pattern concerning the graphical drawing instruction does not change the contents of a memory at a drawing destination before and after the drawing process regardless of the contents of the*

memory (col. 10, lines 42-67 & col. 11, lines 1-30; Fig. 7; Kunimasa discloses a process in which drawing instructions are analyzed to determine if they are identical or not. An second image pattern along with it's drawing instruction is compared to a first image pattern along with it's drawing instruction, which is stored in drawing object memory unit. If the drawing information is determined to be identical, the second drawing information is not output and the process for the second drawing information is completed at this point.).

In regard to dependent claim 60, Kunimasa discloses *the program storage medium according to claim 59, wherein the determining includes determining that the drawing process can be omitted when it is determined from the drawing attribute of a pattern concerning the graphical drawing instruction and a method for performing the drawing process that the contents of a memory at a drawing destination are not changed before and after the drawing process regardless of the contents of the memory* (col. 10, lines 42-67 & col. 11, lines 1-30; Fig. 7; Kunimasa discloses a process in which drawing instructions are analyzed to determine if they are identical or not. An second image pattern along with it's drawing instruction is compared to a first image pattern along with it's drawing instruction, which is stored in drawing object memory unit. If the drawing information is determined to be identical, the second drawing information is not output and the process for the second drawing information is completed at this point.).

In regard to dependent claim 61, Kunimasa discloses *the program storage medium according to claim 58, wherein the determining includes determining that the drawing process can be omitted when a memory at a drawing destination is in an initialized state* (col. 15, lines 1-38).

In regard to dependent claim 62, Kunimasa does not disclose expressly *the program storage medium according to claim 58, wherein the determining includes determining whether the drawing process can be omitted based on a state of an output status flag that is set when a certain graphical drawing instruction is made valid.*

However, Nagao teaches *determining whether the drawing process can be omitted based on a state of an output status flag that is set when a certain graphical drawing instruction is made valid* (col. 9, lines 39-41; 313 Fig. 3; col. 10, lines 23-32; Nagao further teaches a drawing state storing unit which stores drawing-related information furnished by the instructions from the instruction executing unit. Nagao further teaches internal drawing instructions for drawing text, graphic and images, as well as drawing state instructions for setting color, line attributes and other information necessary for drawing. The Examiner using the broadest interpretation of "other information necessary for drawing" to include state information that relates to whether the instruction is valid or not for executing.).

Therefore, at the time of the invention it would have been obvious to a person of ordinary skill in the art to combine Kunimasa with Nagao for the benefit of not

executing unnecessary drawing instruction so that high speed and high quality drawing process may be enabled (col.3, lines 32-34).

In regard to dependent claim 63, Kunimasa discloses *the program storage medium according to claim 62, wherein the drawing attribute of a pattern concerning the graphical drawing instruction does not change the contents of a memory at a drawing destination before and after the drawing process when the memory is in an initialized state even when the drawing process is carried out* (col. 10, lines 42-67 & col. 11, lines 1-30; Fig. 7; Kunimasa discloses a process in which drawing instructions are analyzed to determine if they are identical or not. An second image pattern along with it's drawing instruction is compared to a first image pattern along with it's drawing instruction, which is stored in drawing object memory unit. If the drawing information is determined to be identical, the second drawing information is not output and the process for the second drawing information is completed at this point)

Kunimasa does not disclose expressly *determining that the drawing process can be omitted when the output status flag is not set*.

However, Nagao teaches *determining that the drawing process can be omitted when the output status flag is not set* (col. 9, lines 39-41; 313 Fig. 3; col. 10, lines 23-32; Nagao further teaches a drawing state storing unit which stores drawing-related information furnished by the instructions from the instruction executing unit. Nagao further teaches internal drawing instructions for drawing text, graphic and images, as well as drawing state instructions for setting color; line attributes and other information

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necessary for drawing. The Examiner using the broadest interpretation of " other information necessary for drawing" to include state information that relates to whether the instruction is valid or not for executing.).

Therefore, at the time of the invention it would have been obvious to a person of ordinary skill in the art to combine Kunimasa with Nagao for the benefit of not executing unnecessary drawing instruction so that high speed and high quality drawing process may be enabled (col.3, lines 32-34).

In regard to dependent claim 64, Kunimasa does not disclose expressly *the program storage medium according to claim 62, wherein the output status flag indicates whether a certain graphical drawing instruction has been made valid for each graphical drawing instruction concerning an image for one page.*

However, Nagao teaches *the output status flag indicates whether a certain graphical drawing instruction has been made valid for each graphical drawing instruction concerning an image for one page* (col. 9, lines 39-41; 313 Fig. 3; col. 10, lines 23-32; Nagao further teaches a drawing state storing unit which stores drawing-related information furnished by the instructions from the instruction executing unit. Nagao further teaches internal drawing instructions for drawing text, graphic and images, as well as drawing state instructions for setting color, line attributes and other information necessary for drawing. The Examiner using the broadest interpretation of "

other information necessary for drawing" to include state information that relates to whether the instruction is valid or not for executing.).

Therefore, at the time of the invention it would have been obvious to a person of ordinary skill in the art to combine Kunimasa with Nagao for the benefit of not executing unnecessary drawing instruction so that high speed and high quality drawing process may be enabled (col.3, lines 32-34).

In regard to dependent claim 65, Kunimasa does not disclose expressly *the program storage medium according to claim 62, further comprising dividing one page into a desired number of determination regions, wherein the output status flag is provided in each determination region, and the determining includes determining whether the drawing can be omitted based on the status of the output status flag for each determination region to which a drawing region concerning the graphical drawing instruction belongs.*

However, Nagao teaches *dividing one page into a desired number of determination regions, wherein the output status flag is provided in each determination region, and the determining includes determining whether the drawing can be omitted based on the status of the output status flag for each determination region to which a drawing region concerning the graphical drawing instruction belongs* (col. 1, lines 53-54; col. 5, lines 61-64; col. 9, lines 39-41; 313 Fig. 3; col. 10, lines 23-32; Nagao teaches a drawing state storing unit which stores drawing-related information furnished

by the instruction from the instruction executing unit. The Examiner uses the broadest interpretation of "drawing-related information" to include state information that relates to whether the instruction is valid or not for executing.).

Therefore, at the time of the invention it would have been obvious to a person of ordinary skill in the art to combine Kunimasa with Nagao for the benefit of not executing unnecessary drawing instruction so that high speed and high quality drawing process may be enabled (col. 3, lines 32-34).

In regard to dependent claim 66, Kunimasa does not disclose expressly *the program storage medium according to claim 65, wherein the dividing includes dividing the one page into the determination regions based on bands.*

However, Nagao teaches *the computer program according to claim 65, wherein the dividing includes dividing the one page into the determination regions based on bands* (col. 1, lines 53-54; col. 5, lines 61-64).

Therefore, at the time of the invention it would have been obvious to a person of ordinary skill in the art to combine Kunimasa with Nagao for the benefit of reducing massive memory requirements, thus lowering the cost of memory accordingly (col.1, lines 44-47).

In regard to dependent claim 67, Kunimasa discloses *the program storage medium according to claim 58, wherein the graphical drawing instruction concerns a pattern of a color, and the determining includes determining whether the drawing*

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process can be omitted for each color plane of the color (col. 5, lines 14-34; col. 6, lines 28-40; 2 in Fig. 21; Kunimasa discloses the drawing logical arithmetic process determination unit analyzes the drawing arithmetic process instruction and determines whether the instruction or a plurality of continuous drawing instructions has the content which may be processed without any logical arithmetic process or not. The Examiner relates this teaching to the current invention that the drawing instructions are analyzed to determine if they should be process further or not.).

In regard to dependent claim 68, Kunimasa does not disclose expressly *the program storage medium according to claim 58, wherein the graphical drawing instruction corresponds to an image pattern, and the determining includes detecting continuous pixels of the same color within the image pattern, and determining whether the drawing process can be omitted for each portion of continuous pixels.*

However, Nagao teaches *the graphical drawing instruction corresponds to an image pattern, and the determining includes detecting continuous pixels of the same color within the image pattern, and determining whether the drawing process can be omitted for each portion of continuous pixels* (col. 15, lines 35-54; Nagao teaches pixel values varies from text/graphic data to image data. Text/graphic data have the same pixel value.).

Therefore, at the time of the invention it would have been obvious to a person of ordinary skill in the art to combine Kunimasa with Nagao for the benefit of not

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executing unnecessary drawing instruction so that high speed and high quality drawing process may be enabled (col.3, lines 32-34).

In regard to dependent claim 69, Kunimasa does not disclose expressly *the program storage medium according to claim 58, wherein the graphical drawing instruction corresponds to an image pattern, and the determining includes determining whether the drawing process can be omitted from the image pattern in a word length unit.*

However, Nagao teaches *the graphical drawing instruction corresponds to an image pattern, and the determining includes determining whether the drawing process can be omitted from the image pattern in a word length unit* (col. 14, lines 24-32).

Therefore, at the time of the invention it would have been obvious to a person of ordinary skill in the art to combine Kunimasa with Nagao for the benefit of not executing unnecessary drawing instruction so that high speed and high quality drawing process may be enabled (col.3, lines 32-34).

In regard to dependent claim 70, Kunimasa does not disclose expressly the information processing apparatus of claim 1, wherein when the graphical drawing instruction is made invalid, no drawing operation is performed based on the graphical drawing instruction.

Nagao teaches if the number of graphic or image drawing instructions is lower than a predetermined threshold count, this means that the image drawing instructions is

invalid, the product-sum operations on the mean generating time per drawing instruction for each objects are omitted (col. 19, line 35 – col. 20, line 34).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Nagao and Kunimasa to include wherein when the graphical drawing instruction is made invalid, no drawing operation is performed based on the graphical drawing instruction for the benefit of not executing unnecessary drawing instruction so that high speed and high quality drawing process may be enabled.

Response to Arguments

In the remarks, Applicant(s) argued in substance that

A) Kunimasa does not teach or suggest determining whether a drawing process corresponding to a graphical drawing instruction, from a plurality of graphic drawing instructions, can be omitted by an image formation apparatus, based on a drawing attribute of a pattern corresponding to the graphical drawing instructions, and making the graphical drawing instruction invalid if it is determined that the drawing process can be omitted by the image formation apparatus, such that no drawing operation is performed based on the graphical drawing instruction, as provided by the subject matter of claim 1.

In reply to argument A, applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413,

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208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

In this case, Kunimasa teaches in col. 5, lines 14-34: the drawing logical arithmetic process determination unit analyzes the drawing arithmetic process instruction and determines whether the instruction or a plurality of continuous drawing instructions has the content which may be processed without any logical arithmetic process or not. The Examiner relates this teaching to the current invention that the drawing instructions are analyzed to determine if they should be process further or not.

Kunimasa, however, does not disclose a selection unit that makes the graphical drawing instruction invalid if the drawing omission determination unit determines that the drawing process can be omitted, and make other graphical drawing instructions valid. Nagao teaches in col. 9, lines 39-41; 313 Fig. 3; col. 10, lines 23-32: a drawing state storing unit which stores drawing-related information furnished by the instruction from the instruction executing unit. The Examiner uses the broadest interpretation of "drawing-related information" to include state information that relates to whether the instruction is valid or not for executing). Nagao also teaches if the number of graphic or image drawing instructions is lower than a predetermined threshold count, this means that the image drawing instructions is invalid, the product-sum operations on the mean generating time per drawing instruction for each objects are omitted (col. 19, line 35 – col. 20, line 34).

Applicant's amendments and arguments filed 10/11/2006 have been fully considered but they are not persuasive. Please see the rejection and responds to arguments above.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chau Nguyen whose telephone number is (571) 272-4092. The examiner can normally be reached on 8:30 am – 5:30 pm Mon-Fri.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Heather Herndon, can be reached on (571) 272-4136. The fax phone number for the organization where this application or proceeding is assigned is 703-

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872-9306. On July 15, 2005, the Central Facsimile (FAX) Number will change from 703-872-9306 to 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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